

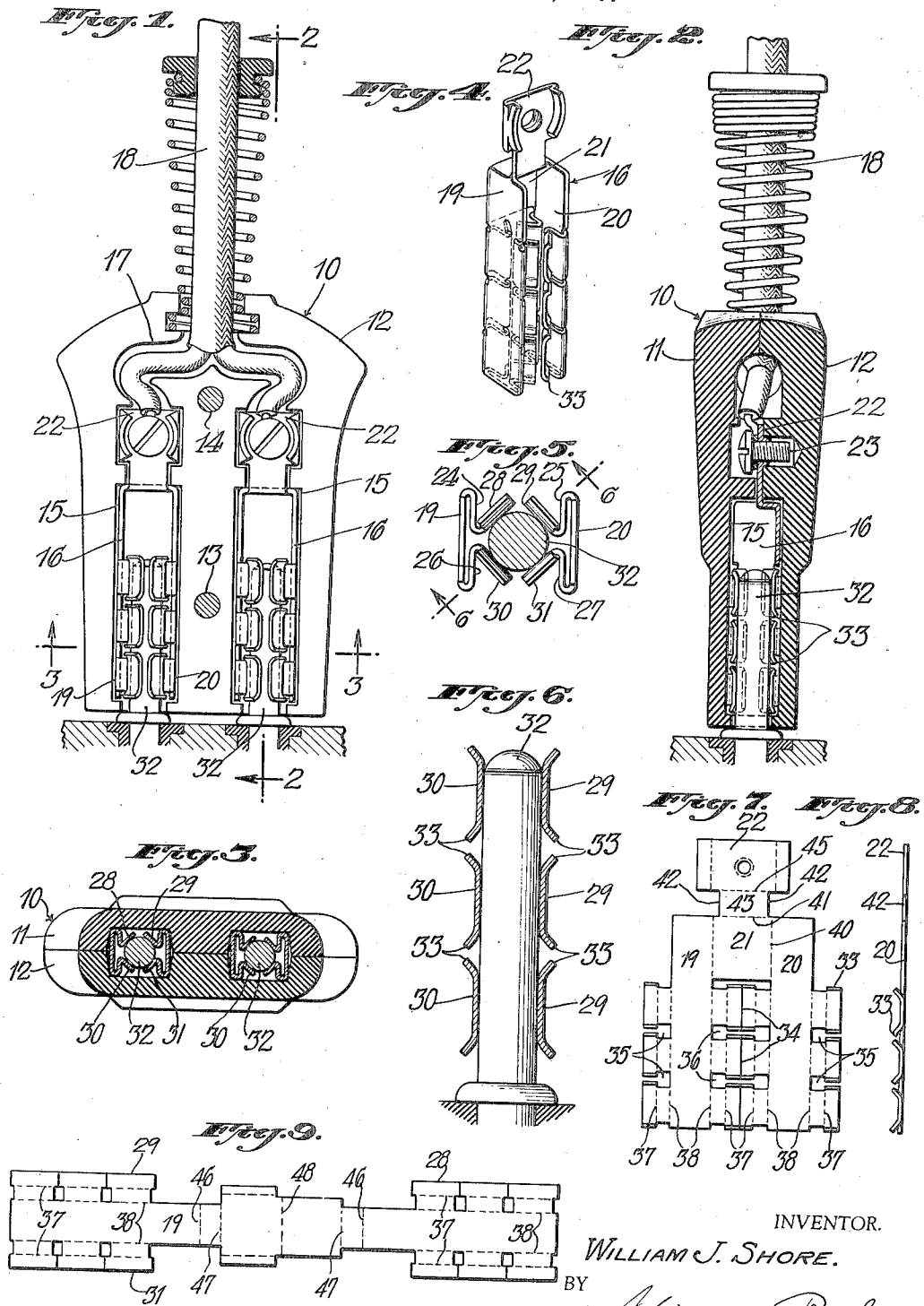
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CONNECTER PLUG

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CONNECTER PLUG

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My invention relates to contact elements or sockets for receiving and engaging contact pins to form an effective electric connection for such appliances as heating elements, flat irons, etc.

Heretofore, in devices of this type, the contact elements for receiving and engaging contact pins have been formed of substantially rigid metal strips or elements, spaced to receive the contact pin and pressed by springs to a resilient contact with the surface of the pin inserted between them. The strips were normally pressed inwardly beyond gripping position, so that they would be displaced by the insertion of the pins placing the springs under tension, which would react on the inserted pin. Instead of moving to parallel positions, however, the strips or plates of these prior contact elements were tilted under certain conditions so that instead of contacting with the pin throughout their lengths, the strips formed only a point contact therewith and thereby formed a very narrow and ineffective connection. Moreover, as the pin is drawn out from contact elements of the prior type, the current is concentrated at a point or a pair of points, thus increasing the tendency to draw an arc.

These disadvantages are avoided by my present invention, which provides a pin receiving contact of simple inexpensive construction, in which a line or extensive contact is made with the pin under all conditions.

The various features of my invention are illustrated in the accompanying drawing; in which—

Fig. 1 is a half section of a connecting plug element of usual construction embodying contact elements of my invention; Fig. 2 is a vertical section of the plug and contact element taken on line 2—2 of Fig. 1; Fig. 3 is a horizontal cross section of the plug and contact elements taken on line 3—3 of Fig. 1; Fig. 4 is a perspective view of a contact element embodying my invention; Fig. 5 is a cross section of the contact element of Fig. 4 and Fig. 6 is a longitudinal section on line 6—6 of Fig. 5; Figs. 7 and 8 are respectively plan and side views of a piece of metal cut to form a blank from which a contact element embodying my invention may be formed; and Fig. 9 is a blank of different form from which the contact element embodying my invention may be formed.

In the accompanying drawing, the contact elements of my invention are shown as applied to an appliance plug 10, such as is commonly employed for flat irons and which may be formed of a pair of complementary parts 11 and 12 secured together by bolts 13 and 14 and having recesses 15 arranged symmetrically on opposite

sides of the bolts to receive the contact element 16 of my invention and communicating with a groove 17, in which the feed wires 18 may be received. It will be understood that the specific form of plug is illustrated merely by way of example and that my contact elements may be used in a wide variety of plugs or connecting apparatus.

In the form of embodiment of the invention shown in Figs. 1 to 6 inclusive, each contact element 16 comprises a pair of spaced parallel strips 19 and 20, connected at their upper ends by a connecting plate 21, from which extends a mounting plate 22 by means of which the contact elements may be mounted in the plugs by a binding post or screw 23 or by other suitable means. From the side edges of each of the strips 19, there extend a series of separated wings 24, 25, 26 and 27, which are doubled to a position flat against or almost flat against the inner faces of the strips 19 and 20 and thence outwardly at an angle, as for example an angle of about 45 degrees to form contact surfaces 28, 29, 30 and 31, respectively.

In the embodiment of the invention illustrated in the drawing, each side edge of each strip is provided, by way of example, with three separate wings. It will be understood, however, that this is merely by way of example and that any number of wings may be provided to suit the requirements of any particular case. It will also be noted that each of the wings is separated from the adjacent wing until they join the strip 19 and that the reverse bending of the wing element gives it resiliency. The wings are normally so positioned that when a pin or contact post 32 is inserted between the strips 19 and 20, the wings will be slightly displaced against the spring action and will thus grip the post 32. To minimize any scraping action of the wings on the post 32 and to aid in breaking an arc, as the post is withdrawn, the side edges of the wings are bent outwardly as at 33.

With the above construction, it will be apparent that each of the wing elements 28—31 of each contact element will grip the post 32 throughout the entire width of the wing because if the post be inserted only partially it will merely press the wing element with which it contacts against its respective spring individually and will not tilt it longitudinally, as will be the case with longitudinally positioned pivoted or spring pressed contact elements.

Accordingly, applicant's invention provides under all circumstances a substantially continuous

line contact throughout the length of pin inserted into the elements. Moreover, four such line contacts are formed with each pin, whereas previously it was difficult, if not impossible, to insure more than two line contacts for each pin.

The contact elements may readily be formed integrally from a single piece of sheet metal. For this purpose, the sheet metal may be cut to the form shown in Figs. 7 and 8, providing the strip portions 19 and 20 from which the wings are formed by slitting the metal longitudinally upward on the line 34 and then cutting transverse slits 35 from each side edge and 36 from the central slit 34. Upon bending the wings in reverse curves on the lines 37 and 38, respectively, the wing elements are formed on the strips 19 and 20. The metal is then bent at right angles on the lines 33 and 40, bringing the strips on their proper spaced relation relative to the central connecting plate 21. Notches are formed in the plate at 41 and 42 to form a neck portion 43, which is bent downwardly on the line 44 and thence upwardly on the line 45 to position the mounting plate or surface 22 centrally, as indicated in Fig. 4.

In the modified stamping blank shown in Fig. 9, the two strips 19 and 20 are shown end to end and the wings 23 to 31 are formed merely by slitting inwardly from opposite sides. The wings may then be shaped by bending on lines 33 and 37, as in Fig. 7. The elements are then completed by bending on the lines indicated at 40, which corresponds to the line 44 of Fig. 7, then on the lines 47 which correspond to the lines 45 of Fig. 7 and then on the central line 48 to bring the strips into their proper spaced relation.

It will thus be apparent that the contacts may be easily made from a single blank of sheet metal by suitably slitting and bending or stamping operations.

It will be noted that each of the contact wings 23-39 acts independently of the other. This insures a multiplicity of contacts even though the pin 22 may be broken or worn or bent or partly destroyed. Moreover, the injury by pitting or otherwise or the breakage or destruction of one or more wings does not destroy the efficiency of contact of the others.

What I claim is:

1. An electric contact element comprising a pair of parallel spaced strips and wings extending from each of the longitudinal edges of said strips at longitudinally spaced intervals into the space between said strips toward the longitudinal axes of said strips, and reversely bent within said space outwardly from the central part thereof to bring the inner faces of said wings tangent to the surface of a contact pin when inserted between said strips.
2. An electric contact element comprising a pair of spaced strips and flat wings extending at longitudinally spaced intervals from each of the longitudinal edges of said strips into the space between said strips and toward the center line of said strips, and thence bent reversely outwardly from the center line of said strips to bring the inner faces of said wings tangent to the surface

of a contact pin when inserted between said strips.

3. An electric contact element comprising a pair of parallel spaced strips and spaced flat wings extending from the edges of said strips to the space between said strips and reversely bent to bring the inner faces of said wings tangent to the surface of a contact pin when inserted between said strips, the said wings having their side edges turned outwardly.

4. An electric contact element comprising a pair of parallel spaced strips joined by a connecting plate at the top and having wings extending from the edges of said strips to the space between said strips and reversely bent to bring the inner faces of said wings tangent to the surface of a contact pin when inserted between said strips.

5. An electric contact element comprising a pair of parallel spaced strips joined by a connecting plate at the top and having wings extending from the edges of said strips to the space between said strips and reversely bent to bring the inner faces of said wings tangent to the surface of a contact pin when inserted between said strips, said contact element being formed integrally of a single strip of metal.

6. An electric contact element formed of a sheet of metal cut and bent to form spaced strips and a connecting plate at the top edges of said strips to hold them in spaced parallel position, the side edges of said strips being slit to form separate wings and said wings being bent inwardly toward said plate and then reversely outwardly to outline a recess of polygonal cross section.

7. An electric contact element comprising a pair of parallel spaced strips, a series of longitudinally spaced contact wings extending from each of the longitudinal edges of said strips and bent at the edges of said strips inwardly into the space between said strips to present a contact face to a plug inserted between said strips, each of said wings being displaceable individually against the spring action of said bent part.

8. An electric contact element comprising a pair of parallel spaced strips, a series of longitudinally spaced contact wings extending from each of the longitudinal edges of said strips and bent inwardly into the space between said strips to present a contact face to a plug inserted between said strips, each of said wings being displaceable individually against the spring action of said bent part, the edges of said wings transverse to the direction of insertion of the plug being bent away from contact with the plug.

9. An electric contact element comprising a pair of parallel spaced strips, a series of longitudinally spaced contact wings extending from each of the longitudinal edges of said strips and bent inwardly into the space between said strips to present a contact face to a plug inserted between said strips, each of said wings being displaceable individually against the spring action of said bent part, said pair of strips and said wings being formed of a single sheet of metal cut and stamped to shape.

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